SUPRA-PUBIC CYSTOTOMY IN TWO STAGES.

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SUPRA-PUBIC cystotomy for the removal of stone in the bladder, the operative treatment of intra-vesical tumors, or the formation of a temporary or permanent fistula in obstructive diseases due to enlarged prostate, has become a legitimate and permanent procedure in surgery. The technique of the operation is destined to undergo improvement. Distention of the bladder and rectum renders the prevesical space more accessible, and Trendelenburg's position is of great value in all supra-pubic intra-vesical operations. If the bladder itself is healthy, the high entrance into the organ for therapeutic purposes can be effected with little or no immediate or remote risk to life. In such cases the ideal after-treatment would be suturing of the vesical and external wounds, thus placing the parts in a condition for healing of the visceral wound by primary intention. Such a result has been obtained only in exceptional cases, even by surgeons of large

experience and specially skilled in the performance of the operation.

Attempts have been made to prevent contact of septic urine with the recent wound by resorting to drainage of the ureters after supra-pubic cystotomy. C. Willems[1] advocates this practice, which, he states, is a delicate yet perfectly practicable procedure. In hypogastric lithotomy it is advisable, whenever union of the wound in the bladder is important and subject to prejudicial influences—in fact, whenever the urine is unhealthy and septic. The ureters should also be drained after the removal of a vesical tumor, whether by hypogastric or perineal incision. The wound is thus protected from contact with morbid urine, and antiseptic plugging of the vesical cavity is permitted.

The patient is placed in the Trendelenburg position, the pelvis being raised about fifteen inches from the table. The abdominal viscera no longer press the walls of the bladder in contact, and the trigone can readily be seen through the hypogastric incision. A catheter, with a Y-shaped extremity, is then passed backward through the urethra. The two branches are next introduced into the ureters. The procedure is a delicate one; the upper part of the mucous fold over the orifice of the ureter must be seized with forceps of the kind used for fixing the conjunctiva oculi. Otherwise the very movable vesical mucous membrane may be pushed forward. As the vesical part of the ureter is a narrow funnel, the passage of the catheter needs skilful manipula-

[1] Annales de la Soc. de Médecine, Ghent, 1892.

tion. The ureter tolerates the catheter very fairly. In a case of Pawlik's the woman tolerated its presence for forty-eight hours; in Schede's (operation for utero-vaginal fistula), for seven days; and in Albarran's (also a woman), for ten days. The catheter thus allows full time for perfect union of the vesical wound.

This after-treatment is too complicated and difficult for the average surgeon, and in many cases of septic cystitis it is not applicable. Most surgeons have, therefore, discarded primary suturing of the visceral wound and rely on drainage and healing by secondary intention. Healing of the wound usually takes place in from four to eight weeks. Future research and experience will undoubtedly enable us to devise some means by which primary healing of the wound will be the rule and not the exception in such cases, and thus shorten the period of recovery to a minimum. The matter is, however, entirely different when supra-pubic cystotomy is performed in a case in which the bladder is the seat of a septic cystitis, and such cases most frequently require the services of the surgeon. The adipose and loose connective tissue in the prevesical space, which constitutes a considerable part of the supra pubic route into the bladder, is exceedingly susceptible to infection with pathogenic microbes. The urine in such cases is ammoniacal, toxic, and irritating, and, when brought in contact with the prevesical tissues, exceedingly prone to cause necrosis. The pus-microbes contained in decomposed, putrid urine find in the prevesical space the most favorable conditions for the exercise of their specific pathogenic

properties. Under such circumstances the wound frequently becomes the seat of sloughing and phlegmonous inflammation, in spite of the most rigid precautions. Suturing of the margins of the vesical wound to the abdominal incision furnishes no protection against this complication. The same can be said of drainage of the bladder and packing of the wound with iodoform-gauze. I have lost two patients from extensive sloughing of the prevesical and paravesical connective tissue. In one case the post-mortem showed that the base of the bladder was nearly separated from the surrounding tissues by extensive necrosis of the adipose and connective tissue interposed between them. It has occurred to me that this source of danger might be successfully avoided by performing the operation in two stages, and I have resorted to this modification in a number of instances, with most gratifying results.

The modification of the operation that I propose is based on the familiar surgical fact that granulating surfaces furnish an almost absolute protection against infection. The first operation is performed under the influence of an anesthetic. The rectum and bladder are distended in the usual manner. The field of operation is rendered aseptic, and the bladder is exposed freely, by dissecting away the prevesical fat over an oval surface about two inches in length and half as wide. After arresting the hemorrhage the wound is firmly packed with iodoform-gauze. The external dressing should be securely fastened by strips of adhesive plaster, which are made to encircle the pelvis and which prevent

the dressing from becoming displaced. At the end of five days the dressing and iodoform-gauze are removed, and the bladder is distended and incised without the use of an anesthetic, if it is intended to simply establish a supra-pubic fistula, or if a small stone is to be removed. More serious intra-vesical operations would require the use of an anesthetic. If the wound has remained aseptic it will now be found covered throughout by a layer of active granulations. These granulations have closed the connective-tissue channels, and have shut out from the wound the balance of the prevesical space. If no anesthetic is used the surface of the wound is brushed over with a 5 per cent. solution of cocaine five minutes before the operation. The bladder and rectum are distended in order to render the anterior wall of the bladder more accessible. The bladder is incised and drained in the usual manner. The septic urine is harmless to the granulations, and thus the dangers of the operation are minimized.

It must be admitted that in patients greatly debilitated by the disease that rendered the operation necessary, the immediate risk of the operation is greatly diminished by performing it in two stages. Another great advantage accruing from this modification of the operation is that at the time the second step is carried out the wound is already in a favorable condition for definite healing. For the purpose of illustrating the value of this modification of performing supra-pubic cystotomy in affections of the bladder complicated by septic cystitis, I will briefly report two cases that have recently come under my observation.

*

Case I.—A. L., an obese man, aged sixty-eight years, had been suffering for two years with symptoms indicative of the presence of stone in the bladder. Frequent micturition, severe pain after each act, and occasionally slight hematuria, were the most prominent symptoms during the first year. About a year ago cystitis set in, with gradual and progressive aggravation of symptoms. The quantity of pus and mucus in the urine increased, and the patient's general health became greatly impaired. At the time of his admission into the Presbyterian Hospital he was extremely anemic, with rapid and feeble pulse and impaired appetite. The quantity of urine secreted during twenty-four hours varied from thirty to forty ounces; the specific gravity was 1012; the secretion was ammoniacal, and contained large quantities of pus, mucus, and bladder and renal epithelia. The filtered urine was found to contain a considerable amount of albumin. It was evident that the morbid process had extended to the pelves of the kidneys by an ascending inflammation. The prostate was enlarged, and a stone in the bladder was readily detected by the introduction of Thompson's sound.

The patient was suffering excruciating pain, and begged to be relieved by an operation as soon as possible. Salol was given in five-grain doses four times a day, and the bladder was washed out twice a day with a solution of boric acid. A concentrated liquid diet and daily warm baths constituted the remainder of the preparatory treatment. At the end of a week of such treatment, the first part of the operation was performed. Chloroform was used as an anesthetic. After washing out the bladder, ten ounces of boric acid solution were injected, and the same quantity of fluid was used to distend Trendelenburg's rectal bag. The supra-pubic region was thor-

oughly disinfected, and the bladder exposed in the usual manner. The prevesical fat was dissected away over an oblong vertical space two inches in length and an inch in width at the middle. No ligatures were required. The wound was packed with iodoform-gauze in such a manner that the margins of the external wound were separated at least an inch and a half or two inches. The external dressing was retained in place by strips of adhesive plaster which encircled the pelvis. The bladder was evacuated, and the rectal pouch removed.

The symptoms were not aggravated by the operation, and the patient recovered promptly from the immediate effects. Five days later the dressing and tampon were removed, and the whole wound was found covered by a layer of active granulations. The anterior wall of the bladder presented the same appearance as the remainder of the wound. The wound was freely brushed with a 5 per cent. solution of cocaine. The bladder and rectum were distended as before, and the granulating part of the anterior wall of the bladder was brought within easy reach. Little, if any, pain was experienced by the patient when the bladder was incised. A large phosphatic calculus was found above and behind the prostate. The stone was removed in pieces, as it broke into numerous fragments when it was grasped with the forceps. The interior of the bladder was sacculated, and presented the typical appearances of long-standing cystitis. A large drain was introduced into the bladder, and the space between it and the granulating wound was packed loosely with iodoform gauze. The whole operation was performed with the greatest facility, and was not productive of much pain. Although the patient died about a week later of uremia, the wound remained in a satisfactory condition. The

granulations retained their vigor, in spite of being continually irrigated by the ammoniacal septic urine.

CASE II.—The second patient was a young man, twenty-five years of age, born in the South, where he had always lived until recently. He had been operated upon for stone in the bladder in October, 1891. It appears that the rectum was wounded at the time, as a urethro-rectal and a urethro-perineal fistula remained. Evidently, recurrence of stone in the bladder took place within a few months after the operation. For nearly a year he had suffered from intense vesical distress. He was admitted into St. Joseph's Hospital, March 15, 1893. His general health was not much impaired. Urination took place on an average every half-hour. The urine was ammoniacal and heavily loaded with pus and mucus. The perineal fistula communicated with the opening in the rectum and urethra. The stone was detected as soon as the steel sound entered the bladder. Rectal examination revealed a hard mass just above the prostate, which was evidently a large stone in a sacculated part of the bladder. The vesico-rectal septum at this point was exceedingly thin. It was found impossible to pass the sound over and beyond the stone.

The conditions in this case precluded any other operation but supra-pubic cystotomy. The patient was carefully prepared, but owing to the existence of the fistulous opening near the neck of the bladder, it was found impossible to distend the organ in advance of the operation. When the perineal opening was closed with clamp-forceps, the fluid escaped into the rectum. I had, therefore, to cut down upon an empty, contracted bladder. The rectum was distended in the usual manner. The space between the peritoneum and the pubes was limited, rendering the

approach to the bladder difficult. The bladder was contracted, and its walls much thickened. A large, soft phosphatic stone was found in the *bas fond* of the bladder, which had become sacculated, and held the stone firmly in place. The greater part of the stone was removed in fragments with a lithotomy spoon. The mucous membrane at the base of the bladder was incrusted with phosphatic deposits. After thoroughly cleansing the bladder by irrigation, a large drain was introduced into the deepest part of the bladder, and the space between it and the wound was packed with iodoform-gauze. The patient rallied well from the immediate effects of the operation, but in spite of the most careful precautions, extensive sloughing of the margins of the wound and the prevesical tissues occurred, which, for a few days, imperilled his life. After the elimination of the necrotic tissue, healthy granulations made their appearance, and from that time the case progressed favorably.

These two cases speak for themselves. In both instances the stone in the bladder had become the indirect cause of septic cystitis. In the first case the patient was old, extremely anemic, marantic, and was, at the same time, suffering from a fatal renal complication, and yet the wound did not become a source of danger, because the incision in the bladder and the extraction of the stone were postponed until the external wound had become protected by a wall of granulation-tissue. In the second case, the patient was a young, robust man, and yet in spite of the most painstaking precautions, the fresh wound became infected by the septic urine, with extensive sloughing, constituting an imminent source of danger to life.

A study of these cases and the remarks that I have made lead me to formulate the following conclusions for further deliberation :

1. Necrosis and phlegmonous inflammation of the margins of the wound and the tissues in the prevesical space (cavum Retzii) not infrequently occur as complications of supra-pubic cystotomy, if the operation is performed for affections complicated by septic cystitis.

2. Supra-pubic cystotomy in two stages greatly diminishes, if it does not entirely overcome, this source of danger.

3. In the first operation, the bladder is freely exposed in the usual manner, when the prevesical fat is dissected away over a vertical oval space at a point corresponding to the location of the proposed visceral incision, after which the wound is packed with iodoform-gauze, and the external dressing is applied in such a manner that it cannot become displaced.

4. The incision in the bladder and the intravesical operation are postponed until the external wound has become covered with a layer of active granulations, which usually requires from four to six days.

5. The second operation can be performed with the aid of cocaine, without general anesthesia.

6. This modification of supra-pubic cystotomy diminishes the immediate risks of the operation, and affords protection against a number of serious *post operationem* complications.